

W9 POC/BIO Workshop **Mesoscale eddies and their roles in North Pacific ecosystems**

Co-Convenors: Kyung-Il Chang (Korea), William R. Crawford (Canada), Shin-ichi Ito (Japan) and Vyacheslav Lobanov (Russia)

Mesoscale eddies move through the ocean carrying physical, biological, and chemical anomalies. They translate over space scales of hundreds to thousands of kilometers and exist for periods lasting from months to years. Eddies are found throughout the North Pacific Ocean in association with strong boundary currents like the Kuroshio and Oyashio and the Alaskan Stream, and also with North Pacific eastern boundary currents like the California and Alaska Currents. They are also prevalent in marginal seas. Generation and evolution of eddies are thought to be related to the shear instability of boundary currents like the Kuroshio, and topographic features in the California and Alaska Currents. Mesoscale eddies affect the structure of marine plankton in various ways. Horizontal advection and vertical mixing by eddies contribute to the generation of high chlorophyll concentration off the coast. They draw shelf water containing nutrients and planktons into the deep offshore waters. Mesoscale eddies are also important for survival of larvae. Eddy pumping also plays a role in episodic nutrient injections into the photic zone resulting in enhanced primary production inside the eddy for cyclonic eddies. For anticyclonic eddies, ageostrophic upwelling and divergent Ekman pumping due to winds over the eddies yield upwelling within the eddy. This workshop will address: 1) dynamical characteristics of mesoscale eddies in different parts of PICES domain, focusing on their similarity and difference; 2) influences of eddies in constituting the dominant physical forcing on the ecosystems; and 3) expected future eddy activities and their possible impacts on North Pacific ecosystems.

Friday, October 23 (9:00-18:00)

- 9:00 *Introduction by Convenors*
- 9:05 **Carol Ladd, Elizabeth Atwood, William Crawford, Phyllis Stabeno and Frank Whitney (Invited)**
Eddies in the Gulf of Alaska (W9-5588)
- 9:35 **William Crawford and Nick Bolingbroke**
Cross-shelf exchange by mesoscale eddies in the northeast Pacific Ocean (W9-5656)
- 9:55 **Vincent Combes, Emanuele Di Lorenzo and Enrique N. Curchitser**
Interannual and decadal variations in eddy-induced cross-shelf transport in the Gulf of Alaska (W9-5598)
- 10:15 **Hirofumi Ueno, William Crawford and Hiroji Onishi**
Impact of Alaskan Stream eddies on chlorophyll distribution in the central subarctic North Pacific (W9-5792)
- 10:35 *Coffee / tea break*
- 10:55 **Sonia Batten, William J. Sydeman, Mike Henry, David Hyrenbach and Ken Morgan**
Ship of opportunity observations of mesoscale eddies in the Gulf of Alaska (W9-5819)
- 11:15 **Vyacheslav B. Lobanov**
A census of anticyclonic eddies in the northern Japan/East Sea (W9-5802)
- 11:35 **Svetlana Y. Ladychenko and Vyacheslav B. Lobanov**
Mesoscale eddies near the Primorye coast in the northwestern Japan/East Sea (W9-5756)
- 11:55 **Sang-Shin Byun, Jong Jin Park, Jae-Hun Park and Kyung-Il Chang**
Observation of near-inertial waves in an anticyclonic mesoscale eddy in the southwestern East/Japan Sea (W9-5585)

- 12:15 **Sergey P. Zakharkov, Tatyana N. Gordeychuk and Elena A. Shtraikhert**
Variations of the production phytoplankton parameters of mesoscale anticyclonic eddy in the northwestern part of Sea of Japan (W9-5655)
- 12:35 ***Lunch***
- 14:00 **Shoshiro Minobe, Kunihiko Aoki, Youichi Tanimoto, Yoshinori Sasaki and Yoshikazu Sasai (Invited)**
Meridional eddy heat transport estimations using satellite data and eddy resolving OGCM (W9-5828)
- 14:30 **Sachihiko Itoh and Ichiro Yasuda**
Characteristics of mesoscale eddies in the Kuroshio–Oyashio Extension Region detected in the distribution of the sea surface height anomaly (W9-5866)
- 14:50 **Hiroshi Sumata, Taketo Hashioka, Maki N. Aita, Naoki Yoshie, Tatsuo Suzuki, Takashi T. Sakamoto, Naosuke Okada and Yasuhiro Yamanaka**
Effects of eddy transport on the nutrient supply into the euphotic zone simulated in an ocean ecosystem model (W9-5727)
- 15:10 **Xiao-Hua Zhu, Jea-Hun Park and Daji Huang**
Observation and dynamics of baroclinic eddies southeast of Okinawa Island (W9-5805)
- 15:30 ***Coffee / tea break***
- 15:50 **Jianping Gan and Anson Cheung**
Vertically varying cyclonic eddy in the southwestern South China Sea (W9-5963)
- 16:10 **Prescilla Kurien, Motoyoshi Ikeda and Vinu K. Valsala**
Mesoscale variability along the east coast of India in spring and fall revealed in satellite data and OGCM (W9-5617)
- 16:30 **Natalya B. Luk'yanova and Igor A. Zhabin**
The interaction of Soya Warm Current waters with the anticyclonic eddies in the southern Sea of Okhotsk (W9-5541)
- 16:50 **Discussion and summary**
- 18:00 ***Workshop ends***